WM-F2065

SERVICE MANUAL

US Model
Canadian Model
AEP Model

Model Name Using Similar Mechanism	New Mechanism
Tape Transport Mechanism Type	MT-WM2051-43

SPECIFICATIONS

Radio
FM: 87.6 — 107.9MHz (AEP), 87.6 — 108MHz (US, Canadian)
AM: 531 — 1,602kHz (AEP),
530 — 1,710kHz (US, Canadian)

Power requirements
3V DC batteries 116 (AA)×2
External DC 3V power sources

Battery life (Approximate hours)

	Playback	FM
Sony Alkaline AM3 (N)	11 hrs.	30 hrs.

Accessories supplied
Stereo headphones (open-air type, 1) Belt clip (1)

FLEXIBLE CIRCUIT BOARD REPAIRING

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

NOTES ON CHIP COMPONENT REPLACEMENT

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

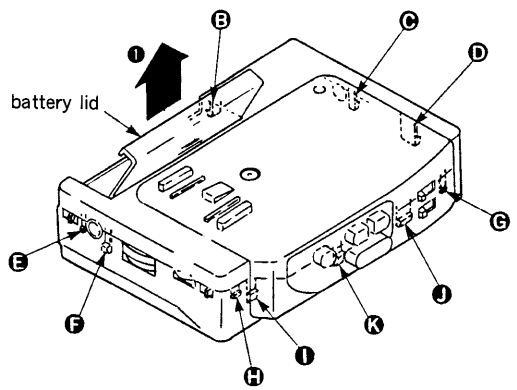
RADIO CASSETTE PLAYER

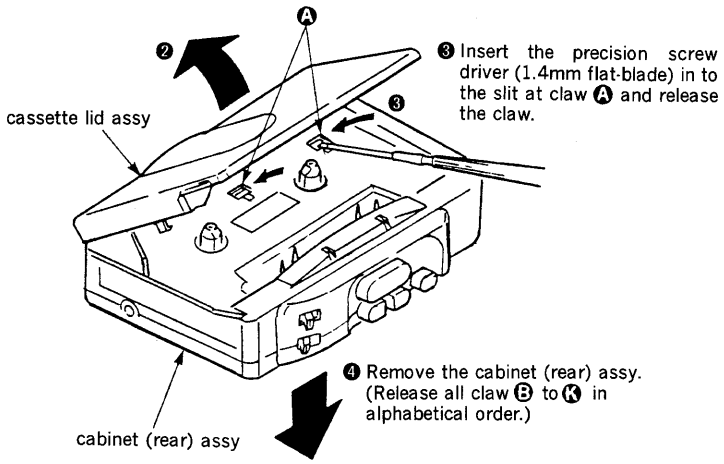
SONY®

SECTION 1
DISASSEMBLY

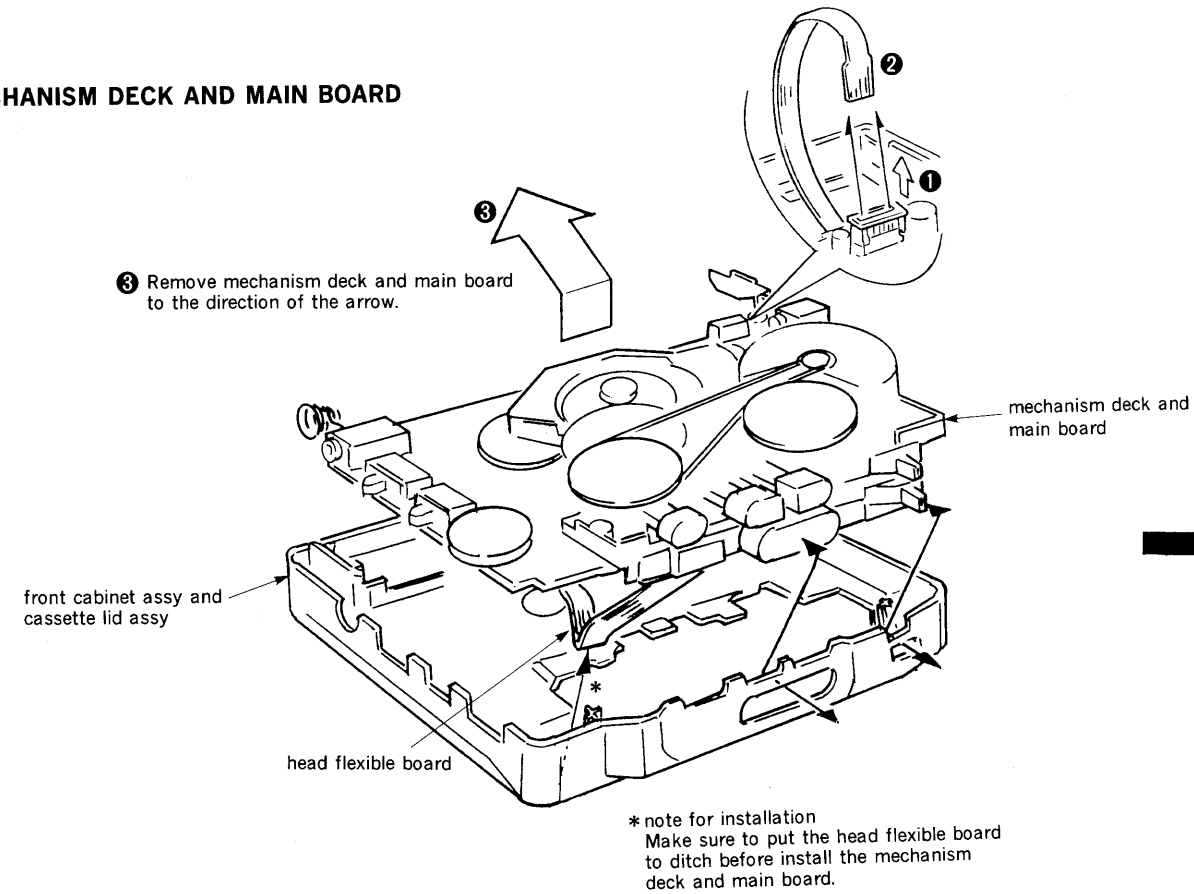
• Follow the disassembly procedue in the numerical order given.

CABINET (REAR) ASSY



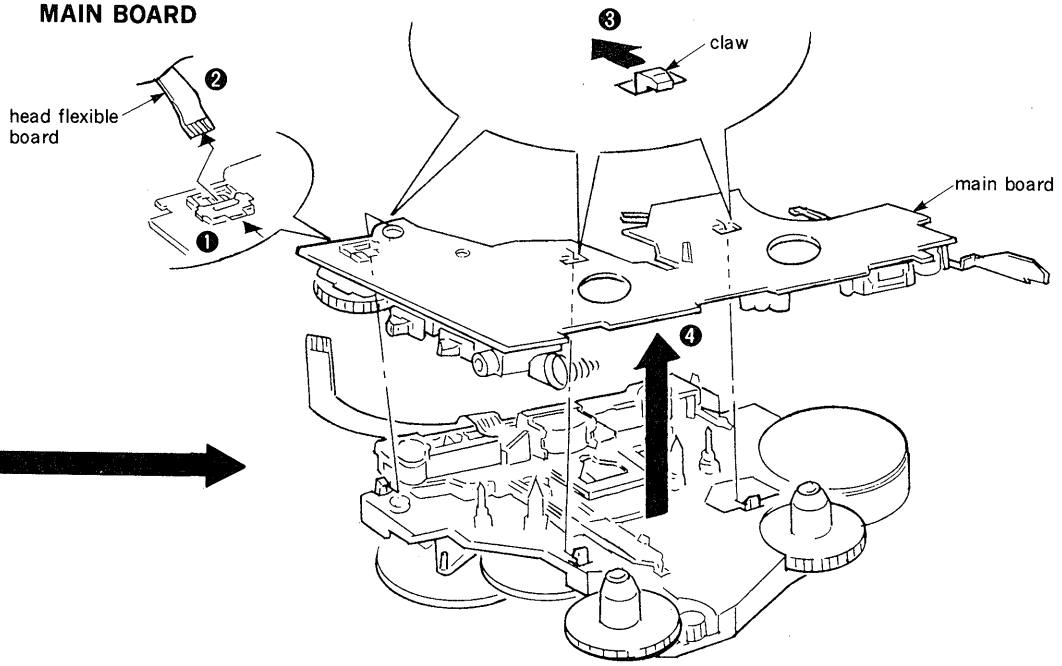

Ⓐ
❷
❸ Insert the precision screw driver (1.4mm flat-blade) in to the slit at claw Ⓐ and release the claw.
cassette lid assy
❹ Remove the cabinet (rear) assy. (Release all claw Ⓑ to Ⓚ in alphabetical order.)
cabinet (rear) assy

MECHANISM DECK AND MAIN BOARD

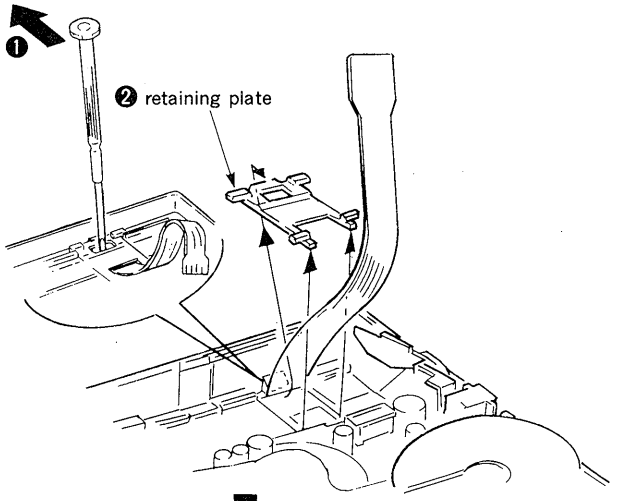

❷
❶
❸
❸ Remove mechanism deck and main board to the direction of the arrow.
mechanism deck and main board
front cabinet assy and cassette lid assy
*
head flexible board

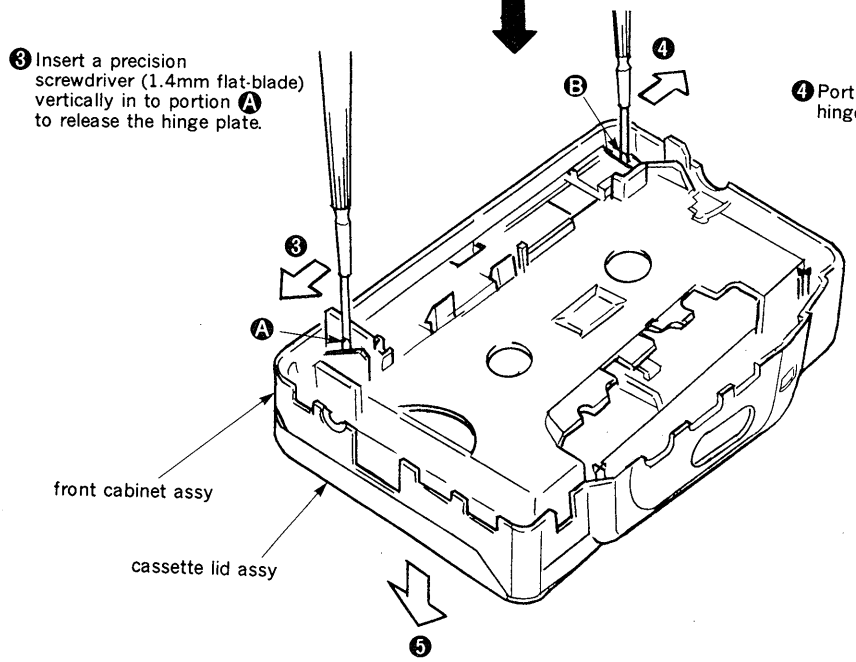
* note for installation
Make sure to put the head flexible board to ditch before install the mechanism deck and main board.

MAIN BOARD

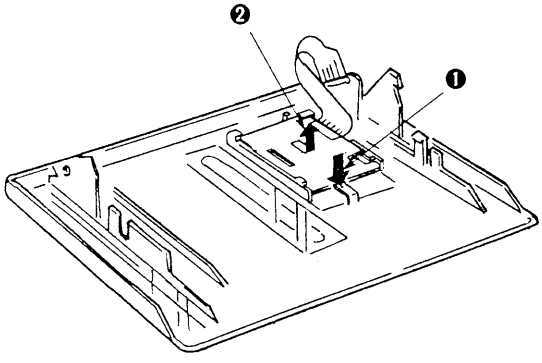


CASSETTE LID ASSY

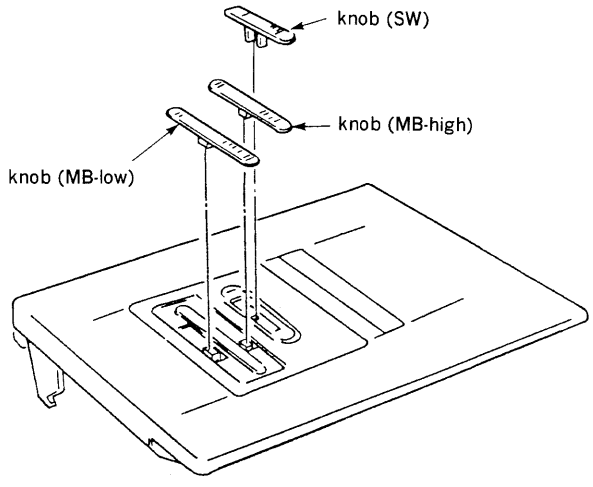



❸ Insert a precision screwdriver (1.4mm flat-blade) vertically in to portion Ⓐ to release the hinge plate.
❹ Portion Ⓑ to release the hinge plate
Ⓑ
❹
❸
Ⓐ
front cabinet assy
cassette lid assy
❺

MB UNIT



(Caution on instaling)

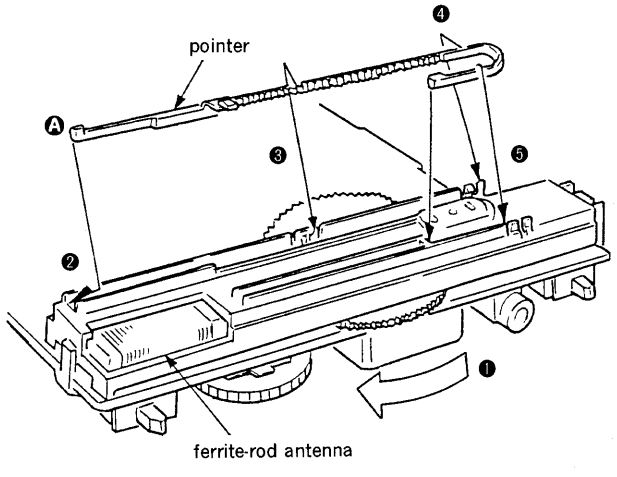


DIAL POINTER SETTING

❶ The knob (TUN) fully turned to the direction of arrow.

❷ Insert the Ⓐ position of pointer to the ditch of left edge.

❸ Hook the pointer to nailin order of number ❸, ❹ and ❺.



SECTION 2
ADJUSTMENTS

2-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denaturedalcohol-moistened swab :
   playback head　　pinch roller
   capstan　　rubber belts
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage (2.5V) unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	20-42g•cm (0.28-0.58 oz•inch)
FWD Back Tension		less than 2g•cm (less than 0.03 oz•inch)
REV	CQ-102RB	20-42g•cm (0.28-0.58oz•inch)
REV Back Tension		less than 2g•cm (less than 0.03 oz•inch)
FF, REW	CQ-201B	more than 60g•cm (more than 0.83oz•inch)

2-2. ELECTRICAL ADJUSTMENTS

PRECAUTION

- Supplied voltage : 2.5V
- Switch and control position
  MODE switch : STEREO ····· AEP model
  SENS switch : DX ····· US, Canadian model
  TAPE switch : NORM
  MEGA BASS switch : OFF
  VOLUME CONTROL : maximum

CASSETTE SECTION

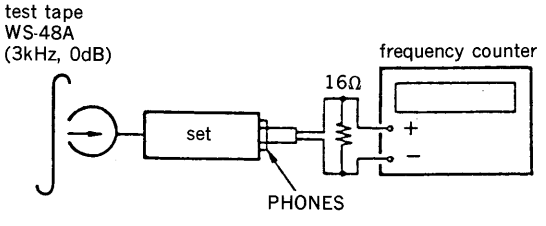
- FUNCTION switch : TAPE

TEST TAPE

Type	Signal	Used for
WS-48A	3kHz, 0dB	Tape Speed Adjustment

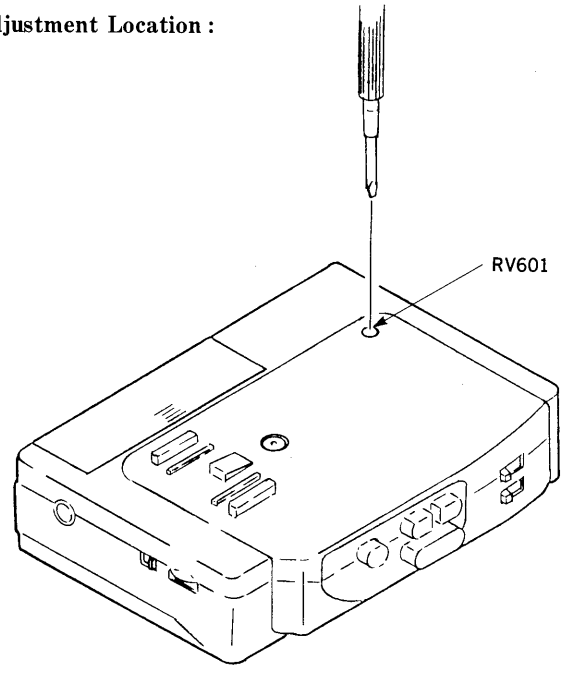
TAPE SPEED ADJUSTMENT

Procedure :



Play back WS-48A (tape center portion) in reverse mode. Adjust the RV601 so that the frequency counter reads 2,975Hz ±10Hz.

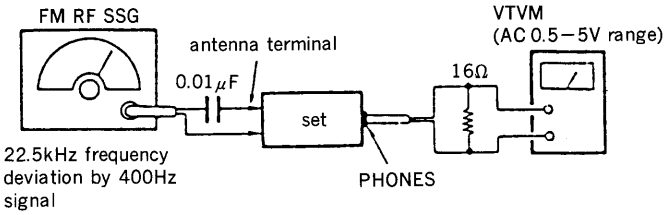
Adjustment Location :



RADIO SECTION

• FUNCTION switch : RADIO

FM SECTION



- Repeat the procedure in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

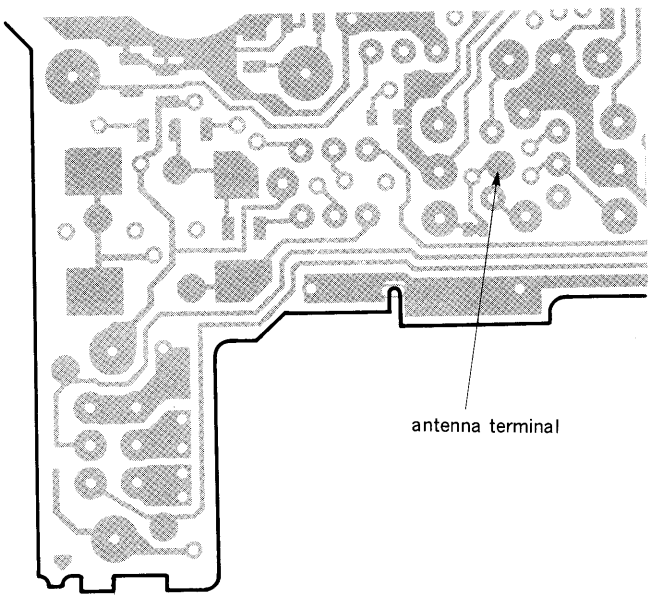
FM Frequency Coverage Adjustment

Pointer position	SG frequency	Adjustment part	Reading on VTVM
f maximum	86MHz	L3	maximum
f maximum	109.5MHz	CT3	

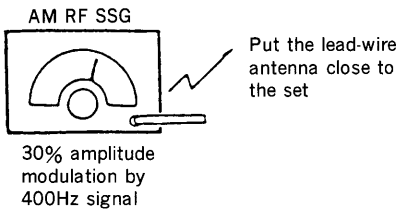
FM Tracking Adjustment

SG and set frequency	Adjustment part	Reading on VTVM
86MHz	L2	maximum
109.5MHz	CT2	

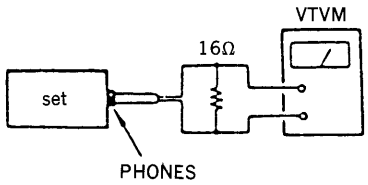
Adjustment Location : main board



AM SECTION



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finaly done by the trimmer capacitors.



AM IF Alignment

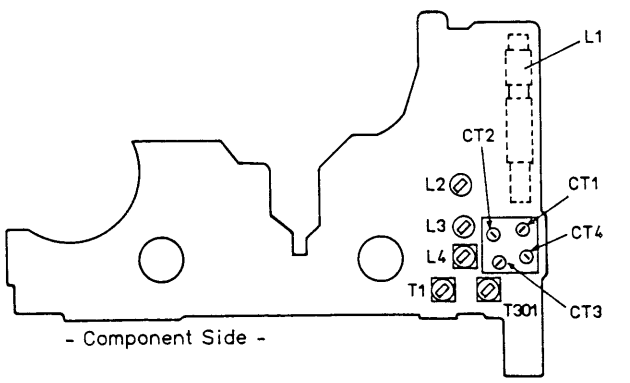
SG and set frequency	Adjustment part	Reading on VTVM
455kHz	T1	maximum

AM Frequency Coverage Adjustment

Pointer position	SG frequency	Adjustment part	Reading on VTVM
f maximum	515kHz	L4	maximum
f maximum	1,750kHz	CT4	

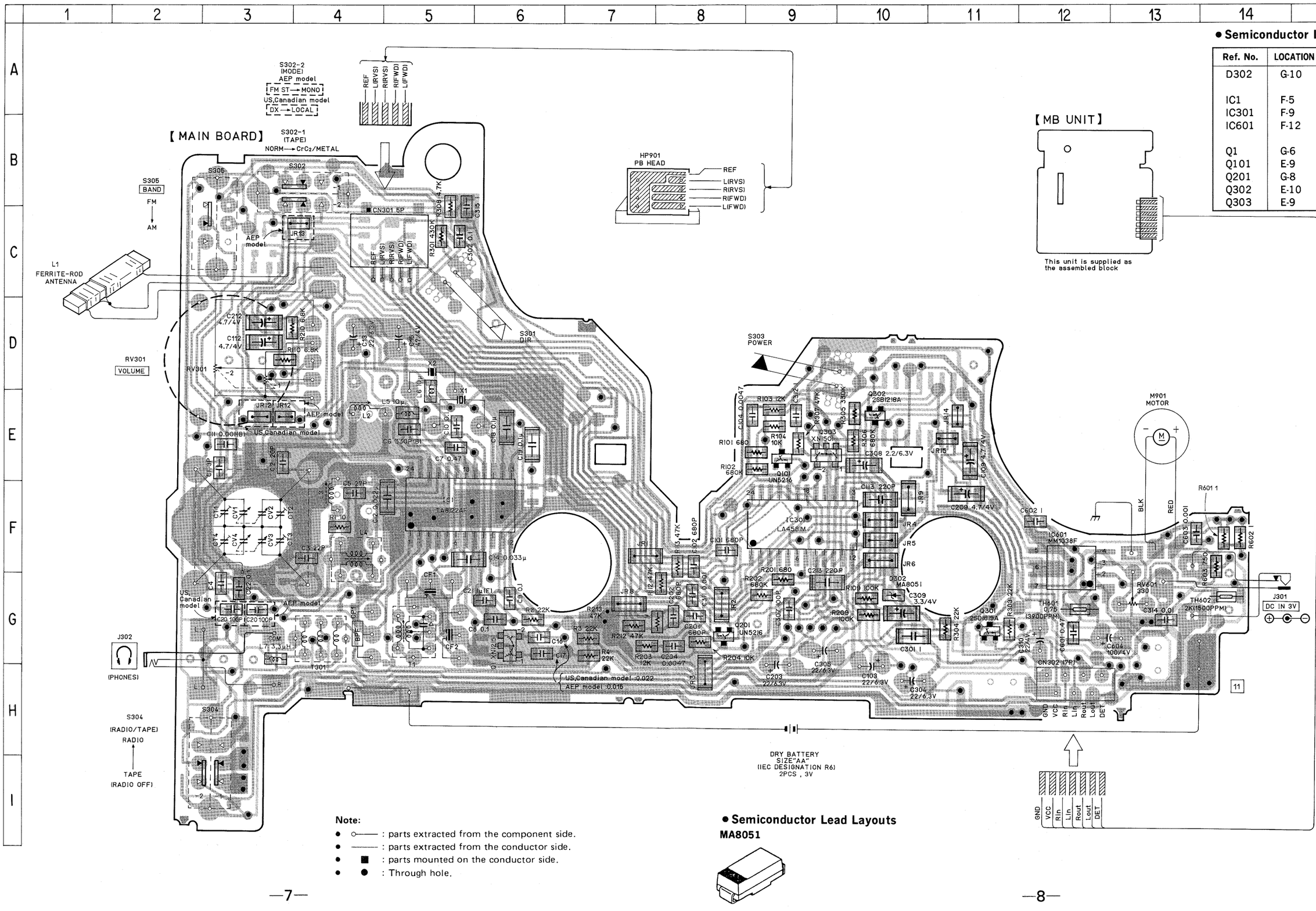
AM Tracking Adjustment

SG and set frequency	Adjustment part	Reading on VTVM
600kHz	L1	maximum
1,400kHz	CT1	



SECTION 3
DIAGRAMS

3-1. PRINTED WIRING BOARD



Note:

- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.

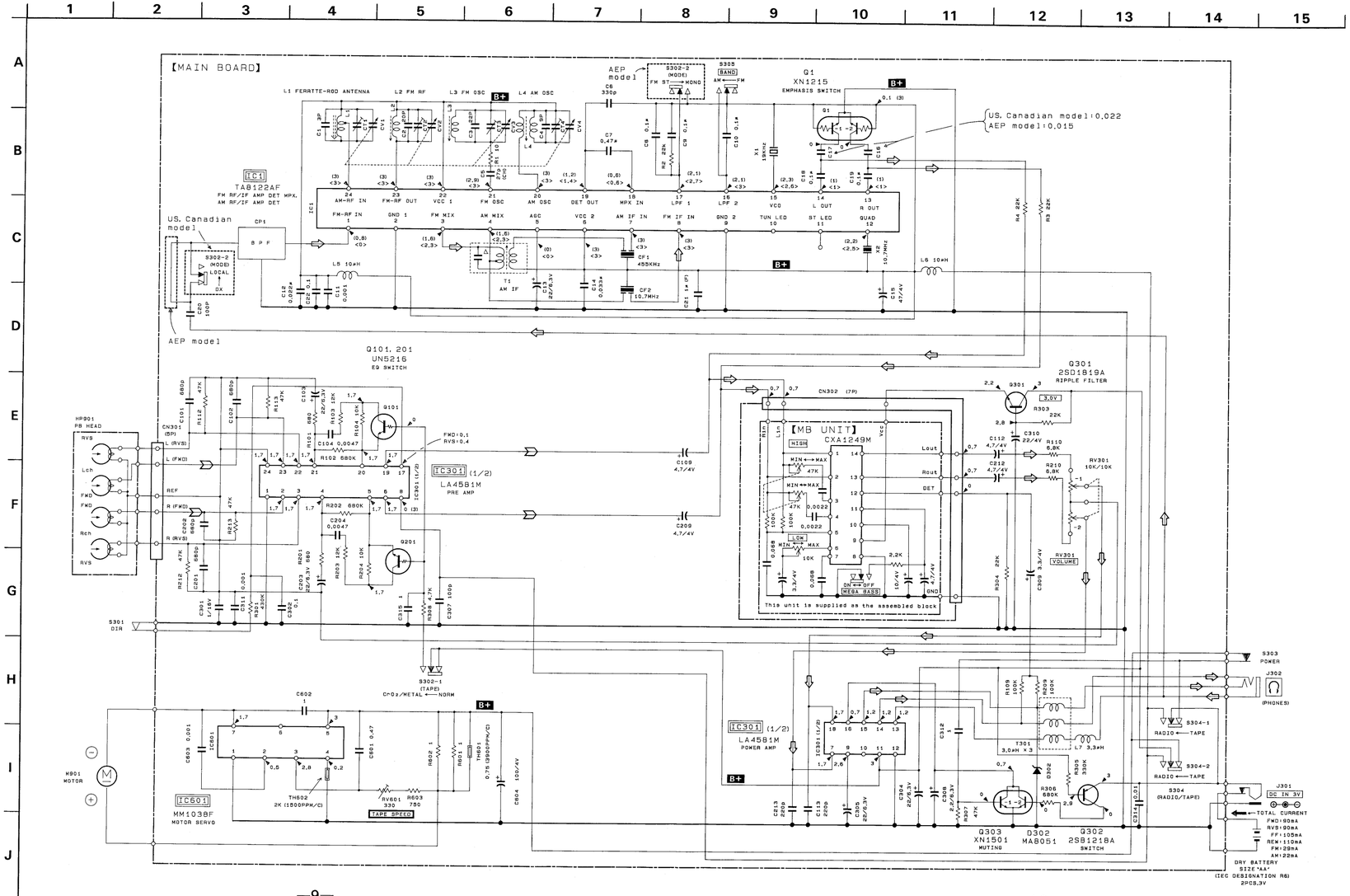
● Semiconductor Location

Ref. No.	LOCATION
D302	G-10
IC1	F-5
IC301	F-9
IC601	F-12
Q1	G-6
Q101	E-9
Q201	G-8
Q302	E-10
Q303	E-9

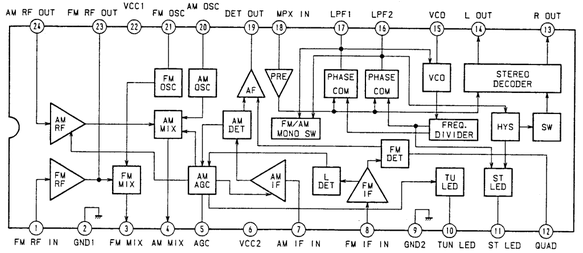
● Semiconductor Lead Layouts

MA8051

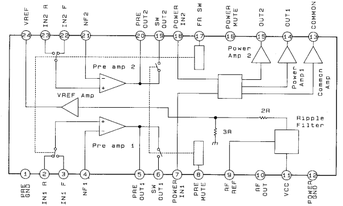
3-2. SCHEMATIC DIAGRAM



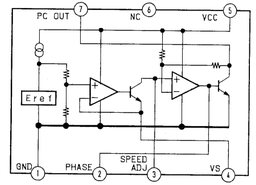
●IC1 TA8122AF



●IC301 LA4581M



●IC601 MM1038F



Note:

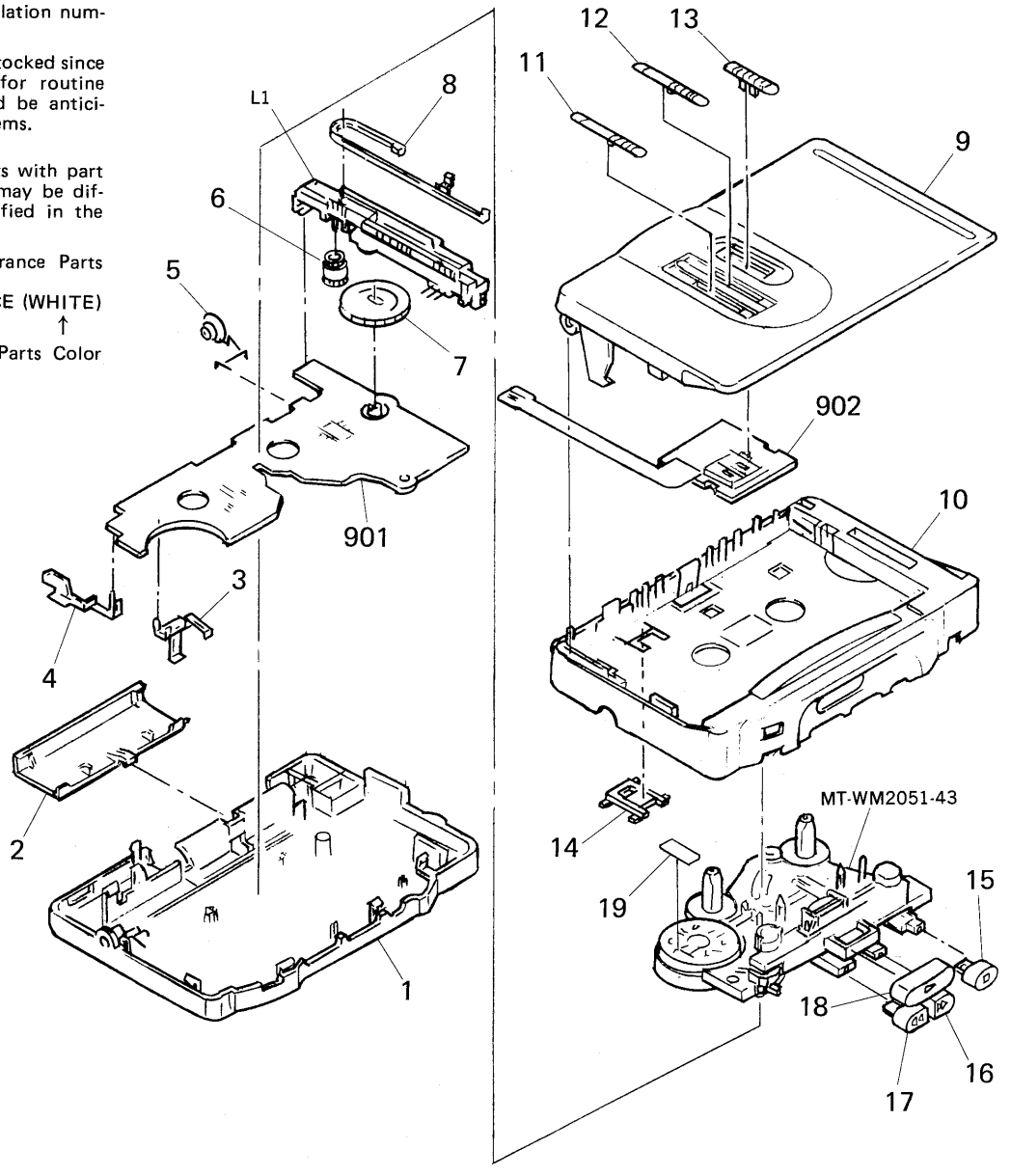
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- B+ : B+ Line
- ▭ : adjustment for repair.
- Total current is measured with no cassette installed.
- Power voltage is dc 3V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : TAPE PB
  ( ) : FM
  < > : AM
- Voltages are taken with a VOM (Input impedance 10MΩ).
- Signal path.
  ⇨ : FM
  ⇦ : PB

SECTION 4
EXPLODED VIEWS

NOTE:

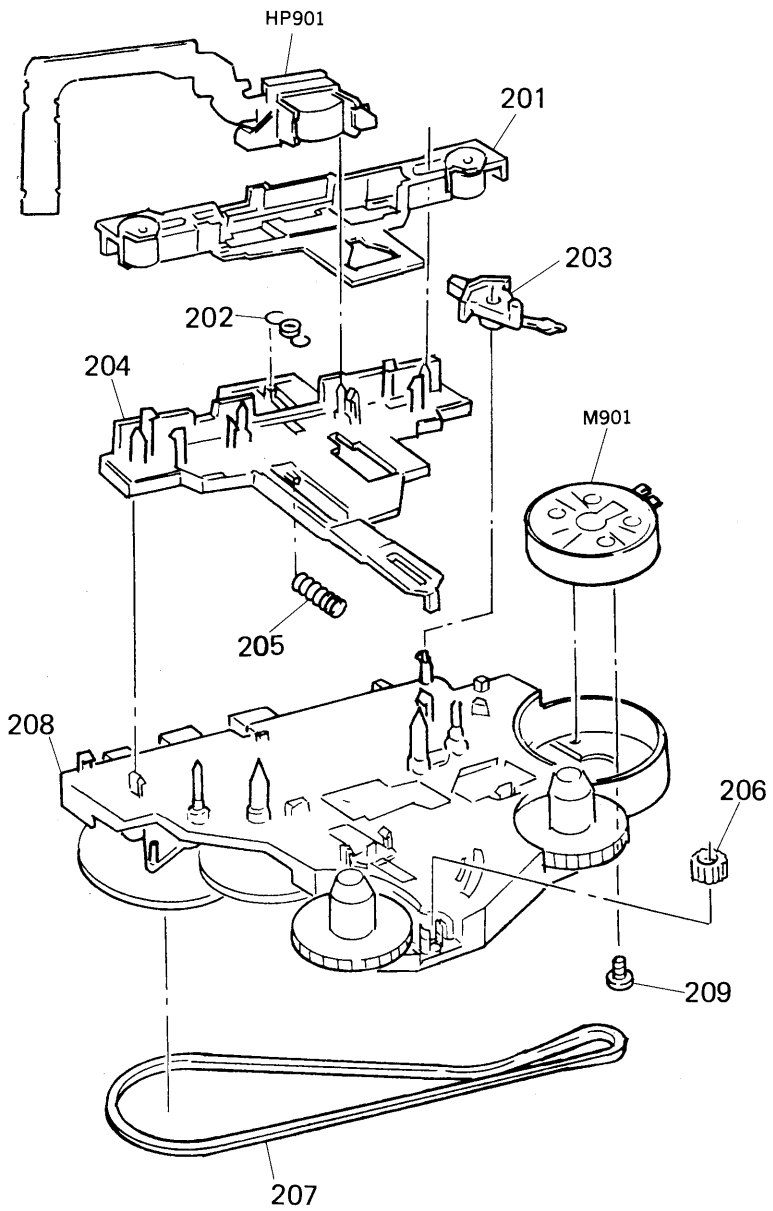
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts Color

4-1. MAIN SECTION



No.	Part No.	Description	Remarks
1	3-358-109-01	CABINET (REAR)	
2	3-358-113-01	LID, BATTERY CASE	
3	*3-358-119-01	SPRING	
4	3-358-121-01	TERMINAL (PLUS), BATTERY	
5	3-358-122-01	SPRING	
6	3-358-105-01	GEAR (TUN)	
7	3-358-104-01	KNOB (TUN)	
8	*3-358-106-01	POINTER	
9	X-3358-106-1	(US,Canadian)..LID ASSY (CF-2), CASSETTE	
	X-3358-119-1	(AEP).....LID ASSY (CF-2), CASSETTE	
10	X-3358-114-1	(US,Canadian)..CABINET ASSY(CF-2), FRONT	
	X-3358-118-1	(AEP).....CABINET ASSY(CF-2), FRONT	
11	3-358-185-01	KNOB (MB-LOW)	
12	3-358-131-01	KNOB (MB)	
13	3-358-130-01	KNOB (SW)	
14	3-358-180-01	RETAINER (FLEXIBLE)	
15	3-358-115-11	BUTTON (STOP)	
16	3-358-116-11	BUTTON (FF)	
17	3-358-117-11	BUTTON (REW)	
18	3-358-114-11	BUTTON (PLAY)	
19	3-831-441-XX	CUSHION, CABINET UPPER 10X7X0.3	
901	A-3015-845-A	(US,Canadian)...MOUNTED PCB, MAIN	
	A-3070-308-A	(AEP).....MOUNTED PCB, MAIN	
902	1-466-279-11	MB UNIT	
L1	1-402-481-11	ANTENNA, FERRITE-ROD	

4-2. MECHANISM SECTION (MT-WM2051-43)



No.	Part No.	Description	Remarks
201	X-3347-145-1	PINCH LEVER ASSY	
202	3-354-874-01	SPRING (PINCH)	
203	3-354-887-01	LEVER, D SELECTION	
204	3-354-890-01	LEVER, PLAY	
205	3-354-875-01	SPRING, COMPRESSION	
206	3-354-869-01	GEAR (REVERSE)	
207	3-354-868-01	BELT	
208	X-3358-122-1	CAHSSIS ASSY	
209	3-352-758-11	SCREW (M1.7X2), TOOTHED LOCK	
HP901	1-543-705-11	HEAD, MAGNETIC (PLAYBACK)	
M901	1-541-722-11	MOTOR	

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

Ref.No.	Part No.	Description		
901	A-3015-845-A	(US,Canadian)...MOUNTED PCB, MAIN		
	A-3070-308-A	(AEP).....MOUNTED PCB, MAIN		
902	1-466-279-11	MB UNIT		
C1	1-163-086-00	CERAMIC CHIP 3PF	0.25PF	50V
C2	1-163-100-00	CERAMIC CHIP 20PF	5%	50V
C3	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C4	1-163-092-00	CERAMIC CHIP 9PF	0.25PF	50V
C5	1-163-103-00	CERAMIC CHIP 27PF	5%	50V
C6	1-163-003-11	CERAMIC CHIP 330PF	10%	50V
C7	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C8	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C9	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C10	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C11	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C12	1-163-063-00	CERAMIC CHIP 0.022MF	10%	50V
C13	1-126-153-11	ELECT 22MF	20%	6.3V
C14	1-163-078-11	CERAMIC CHIP 0.033MF	10%	25V
C15	1-124-432-00	ELECT 47MF	20%	4V
C16	1-163-023-00	(AEP)...CERAMIC CHIP 0.015MF	10%	50V
C16	1-163-037-11	(US,Canadian) ...CERAMIC CHIP 0.022MF	10%	25V
C17	1-163-023-00	(AEP)...CERAMIC CHIP 0.015MF	10%	50V
C17	1-163-037-11	(US,Canadian) ...CERAMIC CHIP 0.022MF	10%	25V
C18	1-163-077-00	CERAMIC CHIP 0.1MF	10%	25V
C19	1-163-077-00	CERAMIC CHIP 0.1MF	10%	25V
C20	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C21	1-164-234-11	CERAMIC CHIP 1MF		10V
C22	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C101	1-163-007-11	CERAMIC CHIP 680PF	10%	50V
C102	1-163-007-11	CERAMIC CHIP 680PF	10%	50V
C103	1-126-153-11	ELECT 22MF	20%	6.3V
C104	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C109	1-135-151-21	TANTAL. CHIP 4.7MF	20%	4V
C112	1-135-151-21	TANTAL. CHIP 4.7MF	20%	4V
C113	1-163-189-00	CERAMIC CHIP 220PF	10%	50V
C201	1-163-007-11	CERAMIC CHIP 680PF	10%	50V
C202	1-163-007-11	CERAMIC CHIP 680PF	10%	50V
C203	1-126-153-11	ELECT 22MF	20%	6.3V
C204	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C209	1-135-151-21	TANTAL. CHIP 4.7MF	20%	4V
C212	1-135-151-21	TANTAL. CHIP 4.7MF	20%	4V
C213	1-163-189-00	CERAMIC CHIP 220PF	10%	50V
C301	1-162-638-11	CERAMIC CHIP 1MF		16V
C302	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C304	1-126-153-11	ELECT 22MF	20%	6.3V
C305	1-126-153-11	ELECT 22MF	20%	6.3V
C307	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C308	1-135-149-21	TANTAL. CHIP 2.2MF	20%	6.3V
C309	1-135-180-21	TANTAL. CHIP 3.3MF	20%	4V
C310	1-124-430-00	ELECT 22MF	20%	4V
C311	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C312	1-164-234-11	CERAMIC CHIP 1MF		10V
C314	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C315	1-164-234-11	CERAMIC CHIP 1MF		10V
C601	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C602	1-164-234-11	CERAMIC CHIP 1MF		10V
C603	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C604	1-124-433-00	ELECT 100MF	20%	4V
CF1	1-527-870-41	FILTER (455kHz)		
CF2	1-577-344-71	FILTER, CERAMIC (10.7MHz)		
CN301	1-569-252-21	HOUSING, CONNECTOR 5P		
CN302	1-565-289-11	HOUSING, CONNECTOR 7P		
CP1	1-236-711-21	FILTER, BAND PASS		
CT1-4 CV1-4	1-151-629-21	CAP, VAR, POLYETHYLENE		
D302	8-719-420-90	DIODE MA8051-M		
HP901	1-543-705-11	HEAD, MAGNETIC (PLAYBACK)		
IC1	8-759-230-39	IC TA8122AF		
IC301	8-759-822-43	IC LA4581M		
IC601	8-759-999-06	IC MM1038F		
J301	1-568-228-11	JACK, EXTERNAL POWER (DC IN 3V)		
J302	1-565-287-11	JACK (PHONES)		
JR1	1-216-296-00	METAL GLAZE 0	5%	1/8W
JR2	1-216-296-00	METAL GLAZE 0	5%	1/8W
JR3	1-216-296-00	METAL GLAZE 0	5%	1/8W
JR4	1-216-296-00	METAL GLAZE 0	5%	1/8W
JR5	1-216-296-00	METAL GLAZE 0	5%	1/8W
JR6	1-216-296-00	METAL GLAZE 0	5%	1/8W
JR8	1-216-296-00	METAL GLAZE 0	5%	1/8W
JR9	1-216-296-00	METAL GLAZE 0	5%	1/8W
JR12	1-216-295-00	METAL GLAZE 0	5%	1/10W
JR13	1-216-295-00	METAL GLAZE 0	5%	1/10W
JR14	1-216-295-00	METAL GLAZE 0	5%	1/10W
JR15	1-216-295-00	METAL GLAZE 0	5%	1/10W
L1	1-402-481-11	ANTENNA, FERRITE-ROD		
L2	1-460-048-11	COIL (WITH CORE)(FM RF)		
L3	1-460-050-11	COIL (WITH CORE)(FM OSC)		

Ref.No.	Part No.	Description
L4	1-406-375-21	COIL (AM OSC)
L5	1-412-006-31	INDUCTOR CHIP 10UH
L6	1-412-006-31	INDUCTOR CHIP 10UH
L7	1-410-999-11	INDUCTOR CHIP 3.3UH
M901	1-541-722-11	MOTOR
Q1	8-729-403-17	TRANSISTOR XN1215
Q101	8-729-420-50	TRANSISTOR UN5215
Q201	8-729-420-50	TRANSISTOR UN5215
Q301	8-729-602-21	TRANSISTOR 2SC4154
Q302	8-729-402-84	TRANSISTOR XN4601
Q303	8-729-421-23	TRANSISTOR XN1216
R1	1-216-001-00	METAL GLAZE 10 5% 1/10W
R2	1-216-081-00	METAL GLAZE 22K 5% 1/10W
R3	1-216-081-00	METAL GLAZE 22K 5% 1/10W
R4	1-216-081-00	METAL GLAZE 22K 5% 1/10W
R101	1-216-045-00	METAL GLAZE 680 5% 1/10W
R102	1-216-117-00	METAL GLAZE 680K 5% 1/10W
R103	1-216-075-00	METAL GLAZE 12K 5% 1/10W
R104	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R109	1-216-097-00	METAL GLAZE 100K 5% 1/10W
R110	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W
R112	1-216-089-00	METAL GLAZE 47K 5% 1/10W
R113	1-216-089-00	METAL GLAZE 47K 5% 1/10W
R201	1-216-045-00	METAL GLAZE 680 5% 1/10W
R202	1-216-117-00	METAL GLAZE 680K 5% 1/10W
R203	1-216-075-00	METAL GLAZE 12K 5% 1/10W
R204	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R209	1-216-097-00	METAL GLAZE 100K 5% 1/10W
R210	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W
R212	1-216-089-00	METAL GLAZE 47K 5% 1/10W
R213	1-216-089-00	METAL GLAZE 47K 5% 1/10W
R301	1-216-112-00	METAL GLAZE 430K 5% 1/10W
R303	1-216-081-00	METAL GLAZE 22K 5% 1/10W
R304	1-216-081-00	METAL GLAZE 22K 5% 1/10W
R305	1-216-109-00	METAL GLAZE 330K 5% 1/10W
R306	1-216-117-00	METAL GLAZE 680K 5% 1/10W
R307	1-216-089-00	METAL GLAZE 47K 5% 1/10W
R308	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W
R601	1-217-671-11	METAL GLAZE 1 5% 1/10W
R602	1-217-671-11	METAL GLAZE 1 5% 1/10W
R603	1-216-046-00	METAL GLAZE 750 5% 1/10W
RV301	1-238-072-11	RES, VAR, CARBON 10K/10K (VOLUME)
RV601	1-241-028-11	RES, ADJ, CARBON 330 (TAPE SPEED)

Ref.No.	Part No.	Description
S301	1-571-986-31	SWITCH, LEAF (DIR)
S302	1-571-478-11	SWITCH, SLIDE (TAPE)
S303	1-571-986-11	SWITCH, LEAF (POWER)
S304	1-571-478-11	SWITCH, SLIDE (RADIO/TAPE)
S305	1-571-478-11	SWITCH, SLIDE (BAND)
T1	1-404-899-21	TRANSFORMER, IF (AM IF)
T301	1-409-471-21	COIL, TRAP (3UHX3)
TH601	1-809-003-11	THERMISTOR, POSITIVE
TH602	1-809-001-11	THERMISTOR, POSITIVE
X1	1-577-091-21	OSCILLATOR, CRYSTAL (19kHz)
X2	1-577-344-71	FILTER, CERAMIC (10.7MHz)

ACCESSORY & PACKING MATERIAL

3-346-518-01	CLIP, BELT
*3-358-024-01	(US).....CUSHION (UPPER)
*3-358-167-01	(Canadian,AEP)...CUSHION (UPPER)
*3-358-162-01	(US).....CUSHION (LOWER)
*3-358-168-01	(Canadian,AEP)...CUSHION (LOWER)
*3-358-172-01	(Canadian,AEP)...INDIVIDUAL CARTON
3-751-531-11	(AEP).....MANUAL, INSTRUCTION
3-751-531-21	(US).....MANUAL, INSTRUCTION
3-751-531-31	(Canadian)...MANUAL, INSTRUCTION
8-952-260-92	HEADPHONE MDR-W10L/1 SET

9-955-707-11

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